



Quick Start Guide

Universal Device Driver

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1. Overview

This document provides information for quickly configuring the Universal Device Driver (UDD) on version 6.10 and above of KEPServerEX or ThingWorx Kepware Server.

1.1 What is the Universal Device Driver?

The Universal Device Driver allows users to create custom drivers to connect to a wide variety of industrial and IoT devices. These devices may include bar code scanners, weigh scales, sensors, or devices with embedded APIs. The Universal Device Driver is ethernet-based and leverages JavaScript as the scripting language. OPC and other proprietary client interface technologies are handled within the server.

A user creates a JavaScript profile script that manages the building or parsing of data payloads with the device, validates addressing of the tags configured in the server, configures Ethernet connection behavior, and manages the driver's state machine. Ethernet connection management with the device (i.e. TCP sockets) are handled by the driver outside of the profile script, eliminating the need for the user to manage socket-level interactions with the device.

1.2 Communication Paradigms

The Universal Device Driver supports the following communication paradigms:

- Simple Solicited
- Simple Unsolicited
- Publish/Subscribe
- Mixed Mode

2. Components and Concepts

Several components are installed with the Universal Device Driver and it is necessary to have a general understanding of what they are and how they interact.

Script Engine

Installing the Universal Device Driver adds a server component Script Engine. The service is an isolated environment to run the V8 JavaScript engine. All interaction is handled by the server, so the user does not need to interact with the service directly. The service is started when the driver registers a profile script to execute and stops five minutes after use.

Profile

A Profile exists inside the Profile Library and contains a script. Profiles determine how the Universal Device Driver communicates with a device.

Profile Library

The Profile Library is where profiles are stored as part of the server configuration.

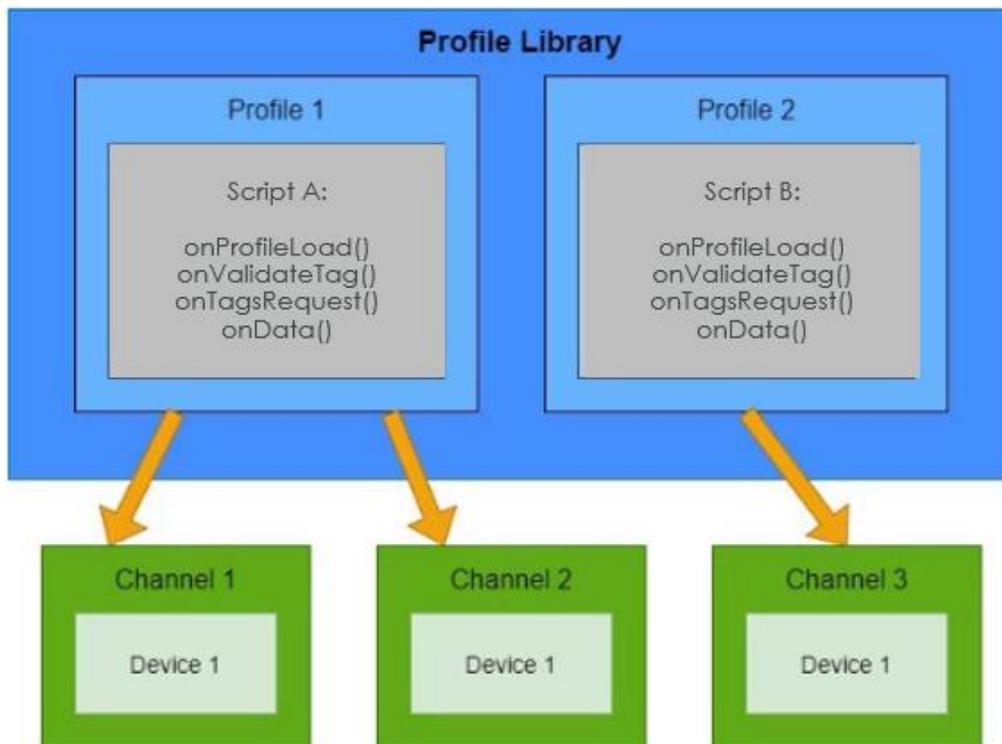
Profile Script

The Profile Script is a set of JavaScript functions that contain the information to communicate with a device using a protocol. The current interface requires four functions to communicate with a device:

- onProfileLoad()
- onValidateTag()
- onTagsRequest()
- onData()

Linking

Linking is the process of associating a UDD channel with a profile to communicate with a device. The image below provides an overview of how a UDD project could be structured and what linking a profile to a channel means.



Considerations

The Profile Library can contain multiple profiles, each independent of each other.

Each Profile can be linked to multiple channels (1:many).

Each channel can only be linked to one profile (1:1).

Each channel maintains an independent state or context. For example, runtime changes in Channel 1 do not affect Channel 2, even if they share the same Profile Script.

3. Configuring the Universal Device Driver

The configuration of the Universal Device Driver is similar to other drivers within KEPServerEX or ThingWorx Kepware Server: create a channel, a device, then add tags and tag groups. However, there are two additional steps that must be completed to configure the driver itself.

It is necessary to load JavaScript profiles into the Profile Library to begin. Once loaded, a UDD channel can access the profiles in the Profile Library.

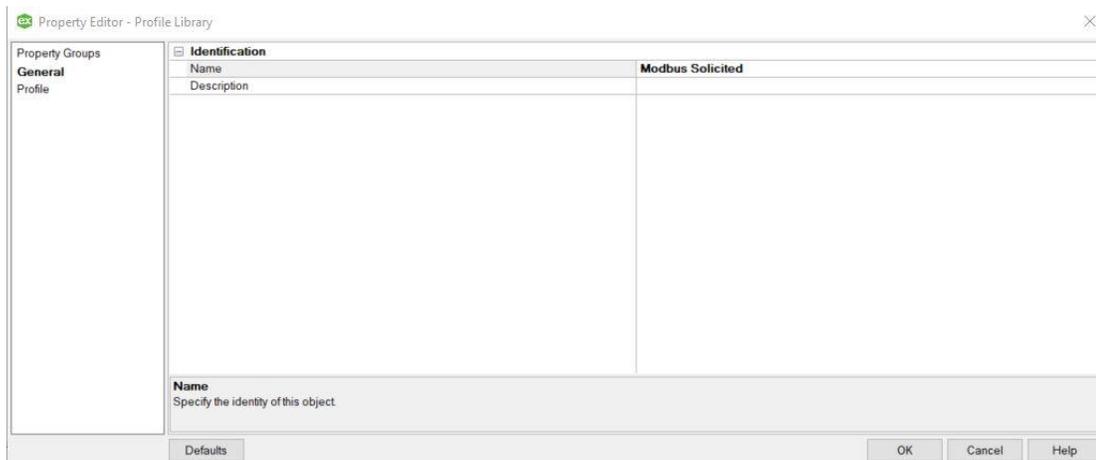
Linking is the process of associating a UDD channel with a profile to communicate with a device. This process is completed when configuring a UDD channel.

3.1 Loading a Profile

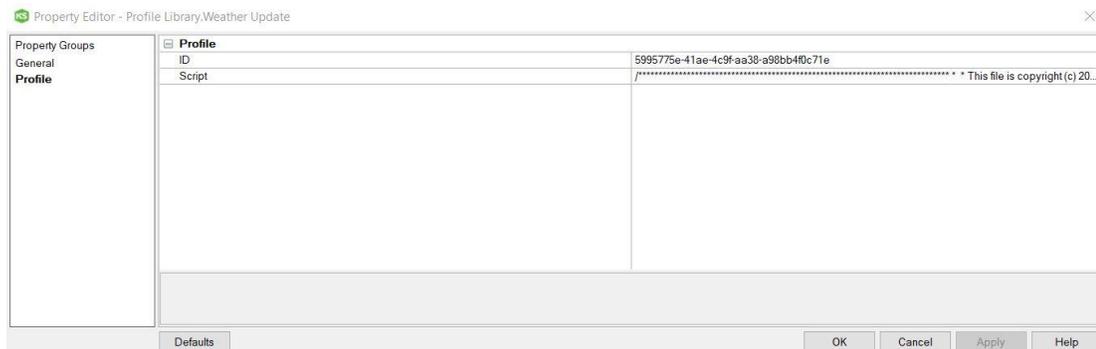
1. Navigate to **Profile Library** node in the project explorer tree.
2. Select **Add Profile...** under **Profile Library** in the project explorer tree (or right-click and choose **New Profile**).



3. Give the profile a Name. This is the name that will appear under the **Profile Library**.



4. Open the **Profile** tab and click on the (...) ellipses to the right of the **Script** field.



5. Navigate to the profile script directory and select the .js file.

Tip: Example profile scripts are located at
<installation_directory>\KEPServerEX\drivers\universal_device\sample_profiles\

Name	Date modified	Type	Size
universal_device_ClientServer	12/7/2021 9:29 AM	File folder	
universal_device_HTTP	12/7/2021 9:36 AM	File folder	
universal_device_MBE	12/7/2021 9:29 AM	File folder	
Universal_device_Mettler_Toledo	12/7/2021 9:29 AM	File folder	
universal_device_MQTT	12/7/2021 9:29 AM	File folder	
universal_device_Newport	12/7/2021 9:29 AM	File folder	
universal_device_SimulatorProfile	12/7/2021 9:29 AM	File folder	

6. Copy the string in the **ID** field for later use.

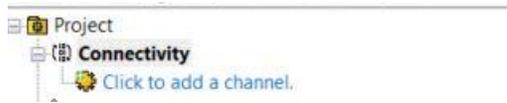


7. Confirm that your profile has been added to the Profile Library node.



3.2 Linking a Profile

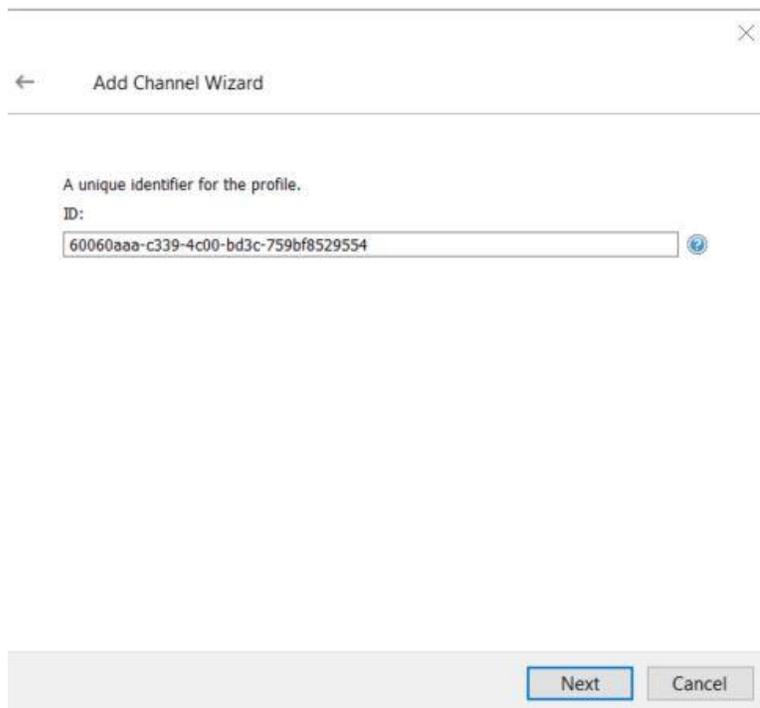
1. Click **Add a Channel** in the project tree.



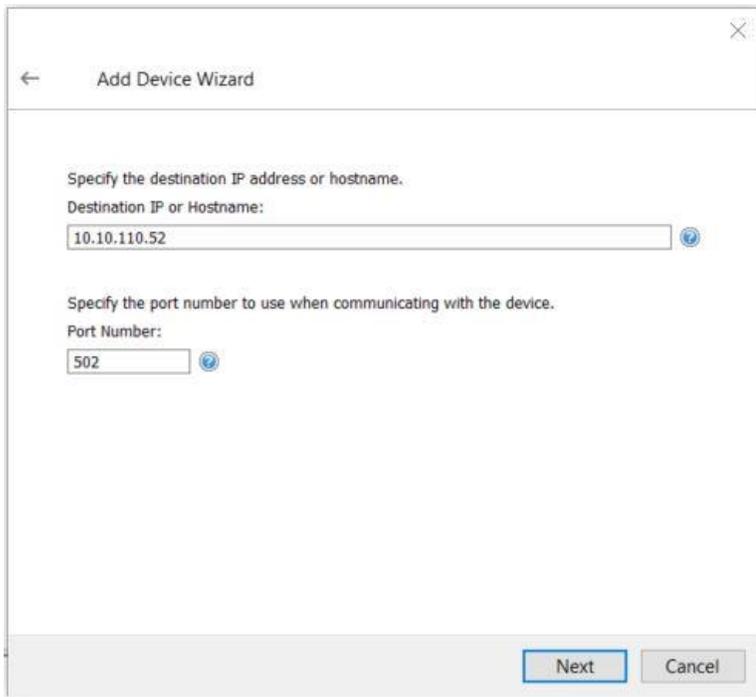
2. Select the **Universal Device Driver** from the drop-down menu.



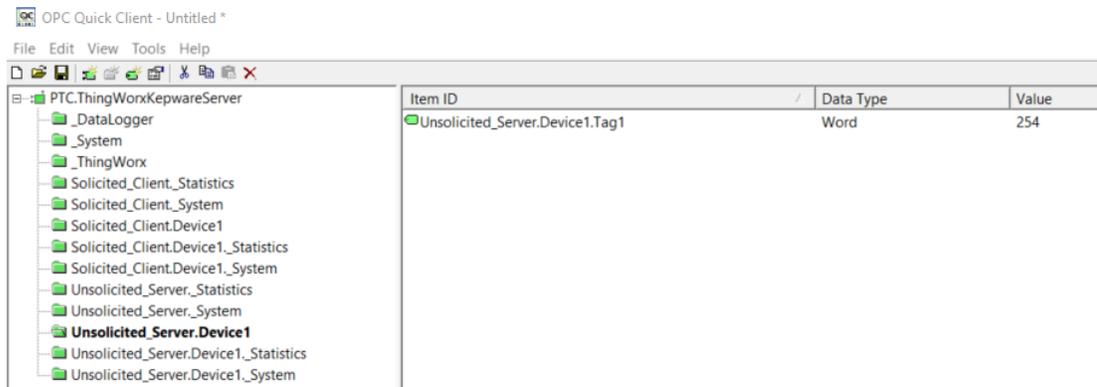
3. Click **Next** until you get to the screen below.
4. Paste the **Profile ID** in the field. This is the Linking process as described earlier.



5. Right-click on the new channel and select **New Device**.
6. Enter the **Name**, **Destination IP or Host Name**, and **Port Number** of the target device.
7. Click **Next** and fill out the appropriate fields.
8. Click **Finish**.



9. Right-click on the new device and select either **New Tag Group**, **New Tag**, or **Import CSV** to add tags to the device.
10. Open the Quick Client to confirm the flow of data.



Congratulations!